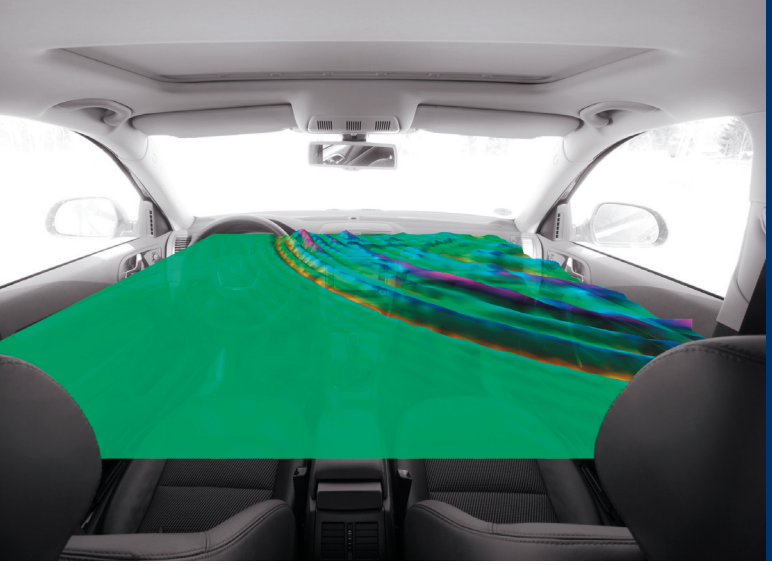
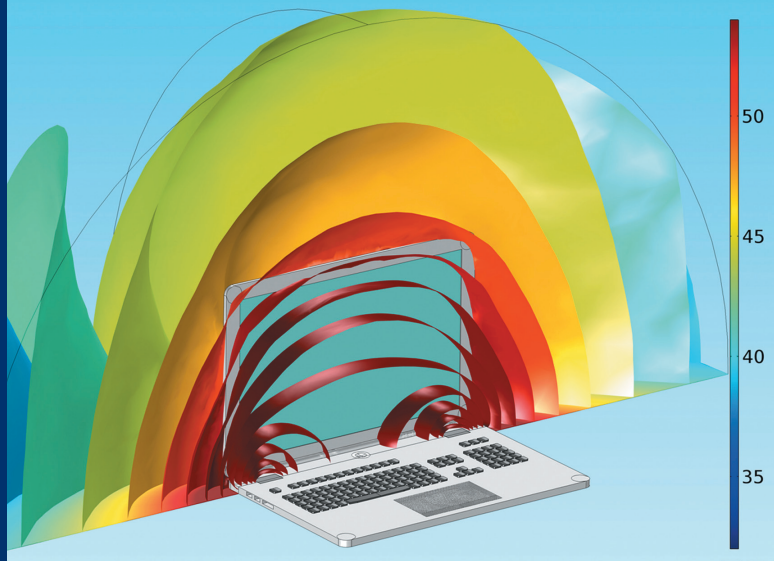
Fraunhofer
IDMT

FRAUNHOFER INSTITUTE FOR DIGITAL MEDIA TECHNOLOGY IDMT

BUSINESS UNIT ACOUSTICS – PROFESSIONAL SERVICES AND CUSTOMIZED SOLUTIONS





OVERVIEW OF SERVICES

- Research and development
- Project planning, design, and implementation
- Acoustic measurements and simulations
- Measurement of audiovisual quality and product perception
- Consultancy, scientific studies and expert opinion reports

RESEARCH AND DEVELOPMENT

We develop, optimize and integrate technologies and methods for recording, analyzing, reproducing and evaluating sound, including the development of prototypes. Our range of services also includes methods for active noise reduction. By leveraging diverse competencies and capacities of Fraunhofer's research and development landscape, as well as the expertise from our network of industry partners, we are capable of meeting also high-level project requirements.

PROJECT PLANNING, DESIGN, AND IMPLEMENTATION

We support our clients in project planning and design, and implementation of:

- innovative sound concepts and audio system solutions,
- novel loudspeaker systems,
- complex audio signal processing systems and algorithms,
- audiovisual test methods, and
- individual user interfaces for editing and controlling audio signals.

OVER TEN YEARS OF EXPERIENCE IN AUDIO TECHNOLOGY, PSYCHOACOUSTICS, AND ELECTROACOUSTICS, TOGETHER WITH STATE-OF-THE-ART SPECIAL FACILITIES AND TEST EQUIPMENT, MAKES FRAUNHOFER IDMT A RELIABLE AND INNOVATIVE RESEARCH AND DEVELOPMENT PARTNER.

ACOUSTIC MEASUREMENTS

Our broad range of technical equipment allows us to conduct all kinds of acoustic measurements, which are helpful in assessing the acoustic characteristics of the investigated object. Fraunhofer IDMT's clients may also request our expertise on novel and innovative measurement techniques. Among other things, we conduct the following measurements:

- Characterization of electroacoustic transducers, e.g. loudspeakers
- Characterization of audio reproduction systems
- Characterization and parametrization of sound fields, e.g. sound power
- Room acoustics measurements, e.g. reverberation time, speech intelligibility
- Dummy head recording
- Analysis of structure-borne sound by laser scanning vibrometer and accelerometer
- Psychoacoustic analysis and parametrization of sound signals, e.g. loudness, sharpness
- Measurement of acoustic parameters, e.g. absorption, reflection, transmission index

ACOUSTIC SIMULATIONS

By offering computer simulation services, Fraunhofer IDMT supports clients in product development, system installation planning, and evaluation of acoustic environments. Taking into account the results of simulations, necessary adjustments can be made at an early stage of planning. We conduct computer simulations with regard to the following fields:

- Room acoustics, e.g. conference rooms
- Vibro acoustics, e.g. vibrations of enclosures
- Enviromental noise
- Speaker building

The anechoic chamber of Fraunhofer IDMT is among the most advanced facilities of its kind. It meets ISO 3745 requirements for quality grade 1 rooms regarding a frequency range from 63 Hz to 20 kHz, which makes the chamber a perfect facility for performing precise acoustical measurements and listening tests. Its interior dimensions of 9.40 m x 4.90 m x 7.20 m and its comprehensive technical equipment allows us to put up and examine a broad range of test objects and systems.

WWW.IDMT.FRAUNHOFER.DE/ACOUSTICS

MEASUREMENT OF AUDIOVISUAL QUALITY AND PRODUCT PERCEPTION

Based on standardized and new developed testing methods, Fraunhofer IDMT offers comprehensive product examination services. Quality and product perception is evaluated by means of computer supported simulation models for algorithmic, objective quality assessment, psychoacoustic audio signal analysis as well as human assessors. We support product development process and benchmarking with following evaluation services:

- Perceptual evaluation according to technical standards (e.g. ITU-R, ITU-T, EBU, DIN and ISO)
- Psychoacoustic audio signal analysis
- Algorithmic estimation of product audio quality
- Development of new test methods, assessing ergonomics, affective states, and quality of experience

CONSULTANCY, SCIENTIFIC STUDIES AND EXPERT OPINION REPORTS

With our knowledge and experience we support clients in preparation of scientific studies or expert opinion reports. Moreover, we offer consultancy services in planning and conducting unbiased, valid, and reliable perception tests as well as data analysis and documentation, fulfilling scientific standards.

Several special facilities are available to perform a broad range of perceptual evaluations. Fraunhofer IDMT provides skilled and trained expert listeners as well as an access to a larger group of unbiased assessors. Under standardized acoustic conditions – following the recommendations of ITU-R BS.1116-1 – quality assessment measurements as well as objective electrical and acoustic measurements of audio hardware can be conducted.

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The equipment at Fraunhofer IDMT in Ilmenau was supported, amongst others, by the European Regional Development Fund.

version 03/2015 photo acknowledgement: Fraunhofer IDMT